

February 2004 NC Weather Review

Overview

Across North Carolina, the month of February 2004 will be noted as one of the snowiest months on record with colder than normal temperatures and near normal precipitation. The greatest departure from normal temperatures occurred across the central mountains east into the foothills, the southern piedmont, and the western sandhills. Charlotte averaged over 5 degrees below normal (5.2°F), Greensboro nearly 4 degrees below normal (3.7°F), Mount Airy 3.5 degrees below normal, and Hickory nearly 3 degrees below normal (2.7°F). The extent of the cold tempered a bit across the coastal region, the northern piedmont and the southwest mountains, but monthly readings were still 1 to 2 degrees below normal. Raleigh averaged nearly 2 degrees below normal (1.7°F), Lumberton and Cape Hatteras averaged around 1.5 degrees below normal, and Asheville averaged nearly one degree below normal (0.7°F).

The coldest period during the month occurred during the first two days of February. On the 1st and 2nd, minimum temperature readings fell into the teens and single digits over the mountains and the lower to mid 20s across much of the remainder of the state. Some of the coldest temperatures for the month include: Asheville 19°F (1st), Raleigh 19°F (1st), Greensboro 20°F (1st), Lumberton 21°F (1st), Fayetteville 22°F (2nd), Hickory 23°F (2nd), Wilmington 23°F (1st), and Cape Hatteras 29°F (1st and 9th).

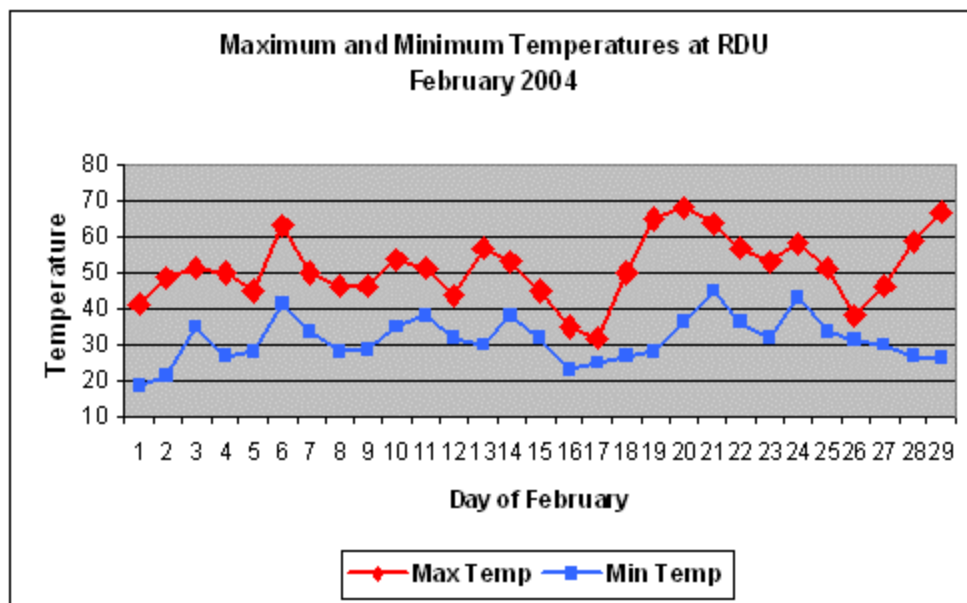


Figure 1 Daily Maximum and minimum temperatures observed in February at Raleigh-Durham (RDU).

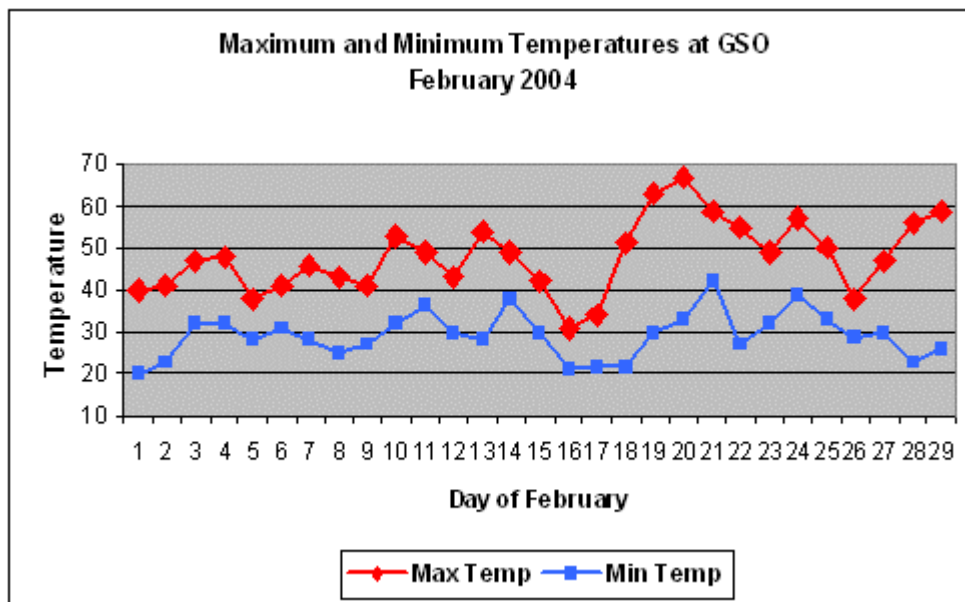


Figure 2 Daily Maximum and minimum temperatures observed in February at Greensboro (GSO).

The heaviest precipitation during February 2004 occurred across the southern and western portions of North Carolina where the monthly totals were frequently over an inch above normal. Some of the above average totals include: Wilmington 5.28 inches (1.62 above normal), Lumberton 4.86 inches (1.5 above normal), and Asheville 4.20 inches (0.37 above normal). Charlotte received 3.55 inches which was normal. Precipitation totals were lighter and below normal across northern and eastern portions of the state. Some selected reports include: Elizabeth City 1.78 inches (1.32 below normal), Greensboro 2.41 inches (0.69 below normal), Fayetteville 2.71 inches (about 0.50 below normal), and Raleigh 3.32 inches (0.15 below normal).

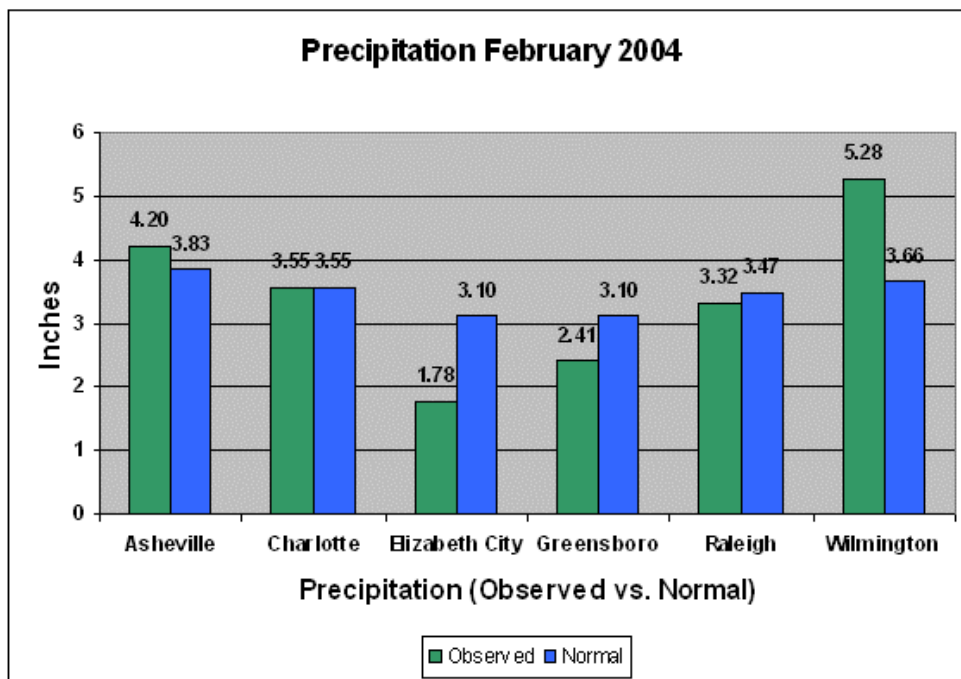


Figure 3 Monthly Precipitation totals for selected locations across NC during February.

Much of the precipitation during February 2004 fell as snow, sleet, or freezing rain. Monthly snowfall totals were above normal across much of the state with numerous storm systems dropping significant amounts of wintry precipitation. Some of the monthly snowfall totals include: Charlotte 13.2 inches (normal 2.3), Greensboro 11.0 inches (normal 3.5), Raleigh 9.2 inches (normal 3), Hickory 8.7 inches, Asheville 6.8 inches (normal 5.3), Wilmington a trace, and Cape Hatteras a trace.

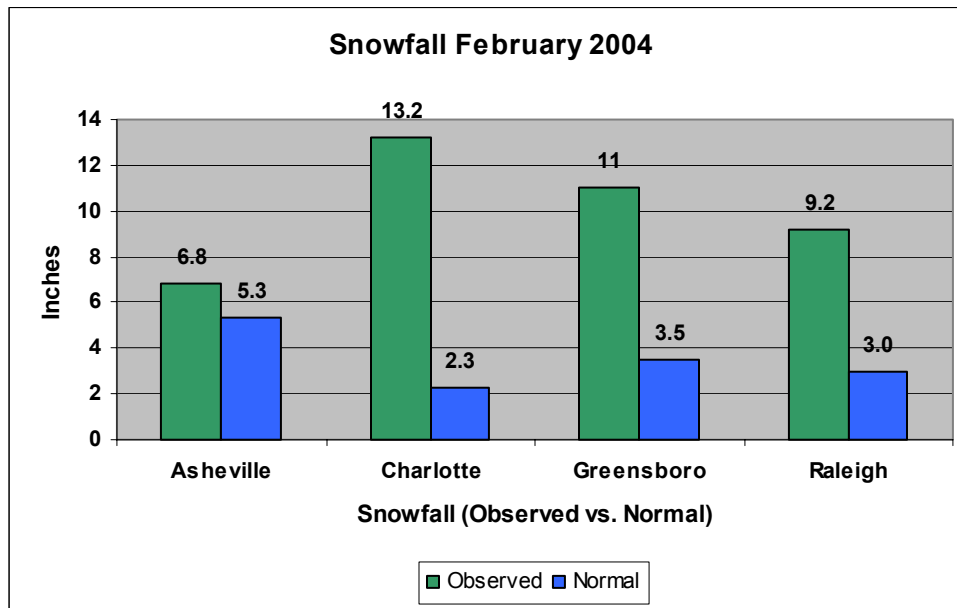


Figure 4 Monthly Snowfall totals for selected locations across NC during February.

Details

The month of February 2004 began with the threat of a significant winter storm. This would be a recurring theme throughout the month as the “southern branch” or subtropical jet stream became very active. The first in a series of “southern branch” systems affected the state on February 2nd and 3rd. However, only the northwest portions of the state realized significant freezing rain and snow.

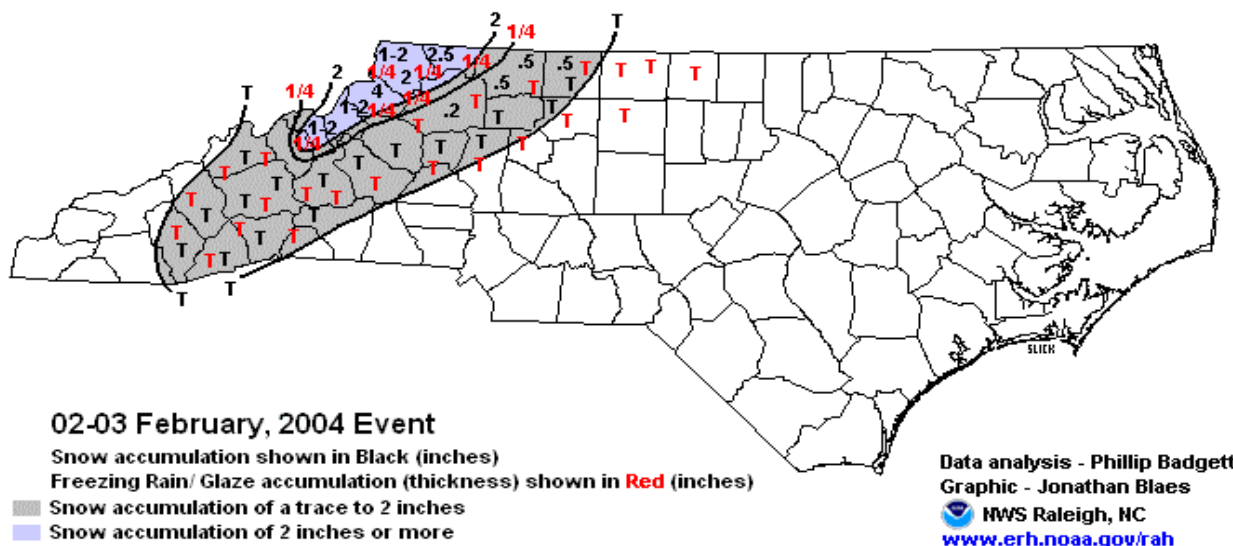


Figure 5 Snow/sleet and freezing rain accumulation map from the February 02-03, 2004 storm.

The second storm to affect the state in February 2004 took on a warmer look as a large-scale trough deepened over the Mississippi valley on the 5th and 6th. Deep southerly flow accompanied this system which lead to widespread rain and warmth. In fact, this storm brought perhaps the warmest and rainiest weather of the month. Some of the rainfall amounts recorded from this storm included: Asheville 2.32 inches, Charlotte 1.28 inches, Raleigh 0.95 inches, and Greensboro 0.86 inches. A few of the high temperatures recorded during this period include: Fayetteville 73 (6th of February), Wilmington 73 (6th of February), Lumberton 73 (6th of February), and Cape Hatteras 66 (6th and 7th of February).

Cold air followed behind this storm system setting up a cold and stormy period that lasted through the last week of the month. The upper air pattern over the United States became an active “split flow” pattern, with the polar jet stream over the northeastern United States supplying cold air, and an active subtropical jet stream supplying moisture. This pattern typically produces an active period that often brings storms with wintry precipitation to North Carolina. The pattern is often very challenging for forecasters. The weather pattern fit its billing with 4 separate winter storms beginning on February 11th and 12th and ending in grand fashion on February 26th and 27th.

The February 11th and 12th winter storm primarily affected elevations above 1500 feet in the mountains where significant snow accumulated. East of the mountains, the temperatures were warm enough for the precipitation to fall mostly as rain. Across the foothills and piedmont the rain mixed with snow at times during heavier bursts of precipitation. Accumulations in these areas east of the mountains were limited to an inch or less on grassy areas.

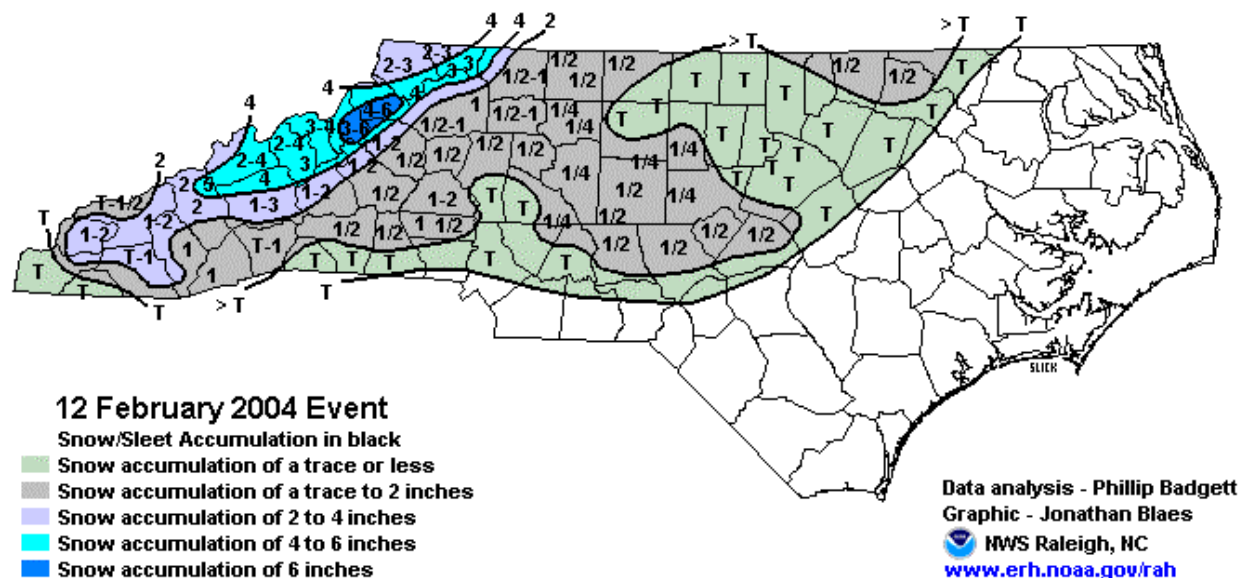


Figure 6 Snow/sleet accumulation map from the February 11-12, 2004 storm.

The state received another blow from a significant winter storm on February 14th and 15th. This system turned out to be a stronger “southern branch” system. In addition, cold air courtesy of cold air damming down the eastern seaboard into North Carolina, allowed much of the precipitation to fall as snow. Snow accumulated between 3 and 6 inches across the northern counties, with local amounts of 7 to 8 inches reported in

Rockingham County near Reidsville and Stoneville. Lesser amounts occurred southward through the state. An upper level low pressure system passed over the state allowing for convective banding of the snow. This generated heavier snow showers which resulted in significant variations in snowfall accumulations, even within a county.

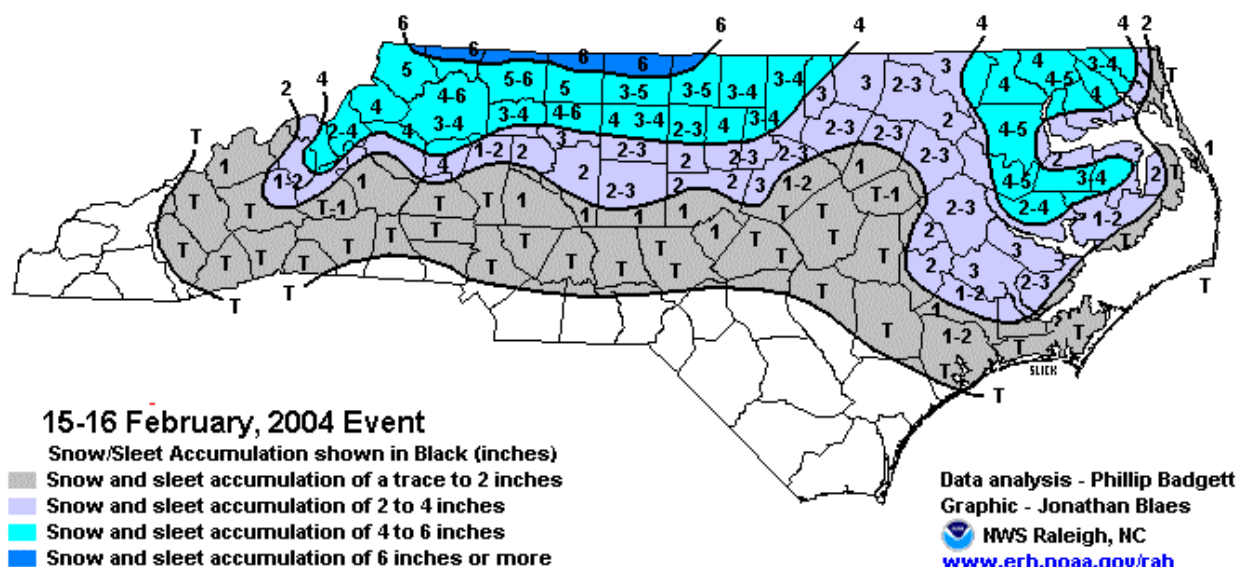


Figure 7 Snow/sleet accumulation map from the February 15-16, 2004 storm.

Another storm system brought wintry precipitation to the state on February 17. An upper level disturbance approached the state during the early morning initiating the development of a surface low off the North Carolina coast. These systems brought a quick burst of snow early in the morning across central North Carolina with areas to the south and east receiving a mix of sleet and freezing rain.

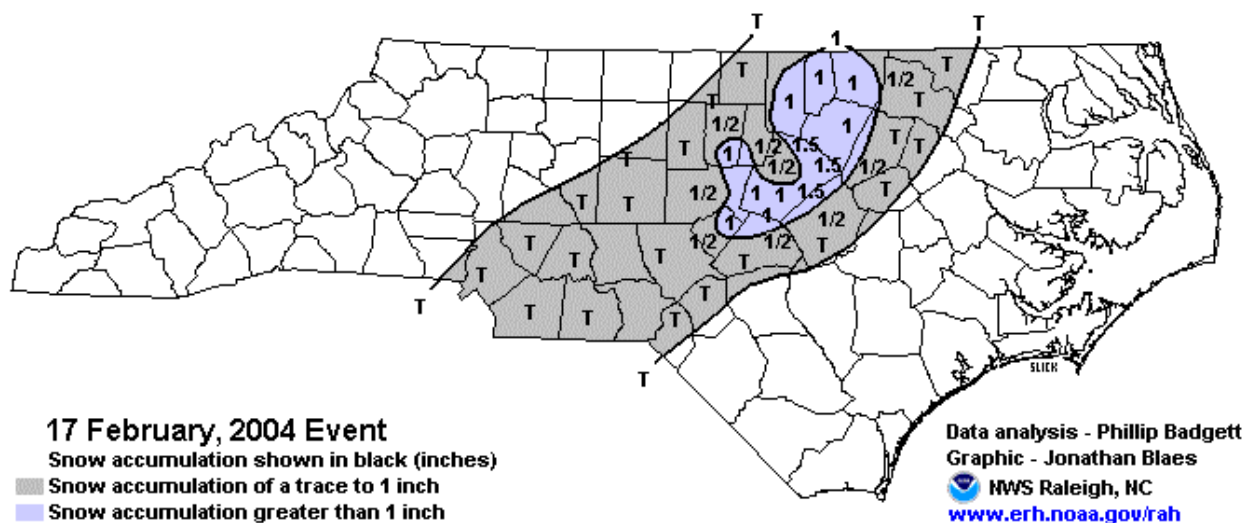


Figure 8 Snow accumulation map from the February 17, 2004 storm.

The final storm in the very active 3 week period at the end of February arrived on February 26th and continued into the morning of the 27th. This storm actually hit the state with a one-two punch, affecting southern and eastern sections on the 26th, then western and central sections later on the 26th and the 27th. The first punch dumped heavy snow over portions of the southern Piedmont and Sandhills. Accumulations totaled 6 to locally 10 inches in areas such as Laurinburg, Hamlet, Fayetteville, and Raeford. Much lighter amounts fell to the north during the day.

The second punch arrived in southwestern North Carolina late in the day and shifted northeast across central and eastern portions of the state overnight. Very heavy convective snow banding developed as a strong upper level low passed over the state overnight into the morning of the 27th. The heavy snow was accompanied by thunder and lightning across Charlotte, Hickory, High Point, and Asheboro. Snowfall amounts ranged as high as 16 to 22 inches from Charlotte northeast to Archdale and Troy. The least amounts fell over the northeast sections where only a few flakes were observed in Elizabeth City and Edenton. The snow changed to rain across southern and eastern North Carolina providing little if any additional accumulations.

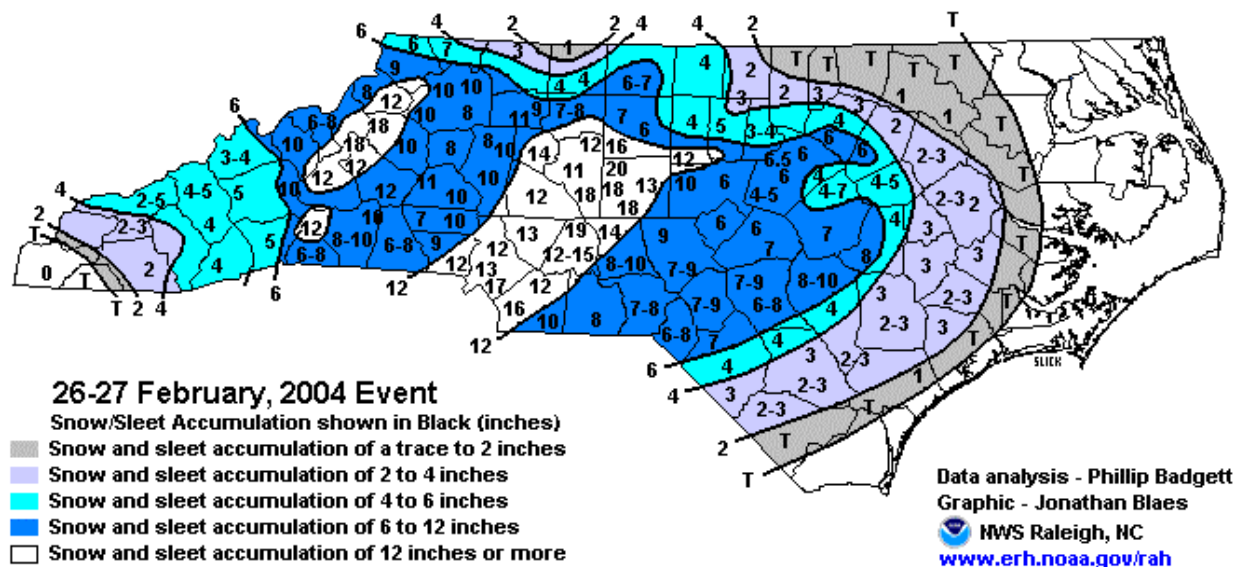


Figure 9 Snow/sleet accumulation map from the February 26-27, 2004 storm.

Increasingly strong late February sunshine helped temperatures warm after the winter storm on February 26th and 27. On the 28th and 29th temperatures warmed to normal or above normal with temperatures in the 60s to near 70 at many places on the 29th. Much of the snow had melted by end of the month on the 29th.

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